CLIMATE EMERGENCY SUMMIT III

Nature-Based Solutions

#BigClimateConversation
#Climate Emergency

30.03.2020
Organised by the Royal Scottish Geographical Society and Co-ordinators
& Sponsored by Scottish Natural Heritage

"As our climate worsens, and its impacts are felt increasingly across society, we need to get a whole lot better at imagining what our future needs to look like – we need to stop building as if we are constrained by business as usual over the past decades and start building better with the next few decades in mind. Today is a small opportunity to help build the world we would all rather see."

Mike Robinson, CEO, RSGS

"In the beginning, you think you are in the future… You have no noise, no fuel, no pollution and you fly forever. And then you realise something: you are not in the future, because all of these technologies exist and you are just – today – in what the technologies allow you to do. And then you understand that the rest of the world is in the past. Because the rest of the world is still using extremely old systems that have been invented in the 19th Century – combustion engines, incandescent lightbulbs, heating/cooling systems, all the industrial process, all the production and combustion of Fossil Energy – all this is from the past… Most of the problems of climate change come from the inefficiency of the systems we use."

Bertrand Piccard, Solar Impulse pilot, RSGS Fellow & RSGS Mungo Park Medallist

Our Climate Change Summits provide a space for motivated people from across the sectors to come together in a safe and open workshop environment. These facilitated sessions are designed to use the collective expertise of participants to highlight purposeful actions, good practice examples and to influence policy making.

Following the success of our first summit on the 28th August 2019, those involved identified a series of issues that would benefit from a more detailed examination. The second summit was held on the 20th January 2020 focused on financing the transition and the role of taxes and subsidies in encouraging helpful actions and discouraging unhelpful ones. This third Summit, focused on nature-based solutions (NBS). It was initiated and funded by Scottish Natural Heritage marking a welcome development where organisations are using the convening power, connections and talents of RSGS as a 'think tank' to advance key topics.

The reports from each workshop highlight the main outcomes and record the ideas discussed during the workshop. We will publish the most significant actions and proposals in a protocol document to be sent to the Scottish Government and the participants in COP 26 (when a new date is confirmed).

All reports are available here at https://www.rsgs.org/informing-policy

WHO'S INVOLVED?

Coordinators

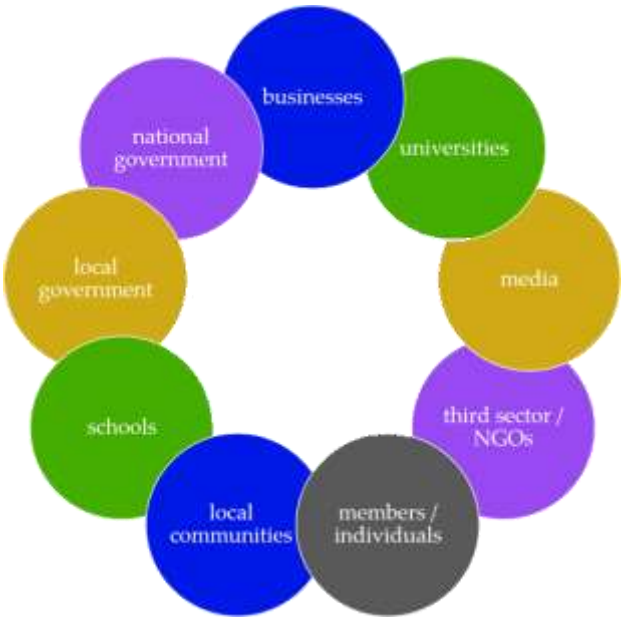
The Climate Emergency Summits are convened and facilitated by three leading figures in climate change in Scotland:

Mike Robinson, Chief Executive, Royal Scottish Geographical Society
Jess Pepper, Climate and Community Consultant
Alan Caldwell, Climate and Community Consultant

Attendees

>20 Different Organisations Represented

Lindsey Gibb, Royal Scottish Geographical Society (Support)
Galina Toteva, Research Associate Edinburgh University (Support)
Clive Mitchell, Scottish Natural Heritage (Host)
Sue Marrs, Scottish Natural Heritage (Host)
Kenneth Loades, The James Hutton Institute
Catherine Payne, Resource Efficient Solutions
Tim Young, Borders Forest Trust
Alasdair Firth, Woodland Trust
Chrissie Valluri, Scottish Natural Heritage
Cecile Smith, Scottish Natural Heritage
Heather Claridge, Architecture and Design Scotland
Ruth Taylor, National Farmers Union Scotland
Andrew Midgley, RSPB
Rebecca Wade, Abertay University
Charles Bestwick, Scottish Environment, Food and Agriculture Research Institutes
Sarah Buckingham, SRUC
Mark Williams, Scottish Water
Elana Bader, Scottish Natural Heritage
Lorna Dawson, The James Hutton Institute
David Somervell, Edinburgh University
Hugh Muschamp, Resource Efficient Solutions
Catriona Jeorrett, Scottish Government
Larissa Naylor, Glasgow University
Angus Hardie, Scottish Community Alliance
David Reay, Edinburgh University Carbon Management
Scott Leatham, Scottish Wildlife Trust
Donald Campbell
Len Seal
Kitty Dutton, 2050 Climate Group
Philip Revell, Scottish Communities Climate Action Network
Graeme Cook, Scottish Parliament
Anna Brand, Scottish Parliament
Alexa Morrison, Scottish Parliament
Alasdair Reid, Scottish Parliament
Keesje Avis, Nourish
Nick Everett, Scottish Natural Heritage
Ross Lilley, Scottish Natural Heritage
Cathy Tilbrook, Scottish Natural Heritage
Holly Gillibrand, Climate Strike
Andrew McBride, Scottish Natural Heritage
Stuart Haszeldine, University of Edinburgh
Hester Robertson, University of Edinburgh



The views quoted in this report are drawn from the event and feedback, and do not represent the views of RSGS or SNH.

FORMAT OF THIS REPORT

#BigClimateConversation #ClimateEmergency

Preface

With the arrival of COVID-19 and two weeks in advance of this summit, Scottish Natural Heritage and RSGS decided to move the event online. This was a bold move at such short notice. From the positive feedback, the online event was very successful and may, we believe, have encouraged an even deeper engagement in the topic from those who participated. The thoughtful and considered contributions following the event in both notes from the day and further 'papers' have greatly enhanced the process.

With COP 26 inevitably postponed due to COVID-19, we feel it is even more important to continue the Climate Emergency Series through this online format.

Foreword

Dr Clive Mitchell, Outcome Manager: People and Nature, Scottish Natural Heritage

The Climate Emergency is the result of burning fossils fuels and changes in the way we use the land that short-circuit global carbon and nitrogen cycles. To remain within safe climate limits (1.5-2°C), the remaining carbon budget for all people, and for all time, is now so small that stopping fossil fuel use, while essential, will not by itself address the problem.

Changing the way we use the land and sea is now essential. Nature-based solutions are vital to creating a safe operating space for humanity.

In 2016 the IUCN defined Nature-Based Solutions (NBS) as 'actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits'.

In a paper last year, Emmanuelle Cohen et al. identified eight principles for nature-based solutions including the need to 'recognize and address the trade-offs between the production of a few immediate economic benefits for development, and future options for the production of the full range of ecosystem services'. Nature-based solutions should, therefore, avoid simplifying an ecosystem, in favour of a particular service or resource, such as replacing natural mixed woodland with a monoculture tree plantation. But is this enough?

INTRODUCTIONS

In order to avoid 'dangerous climate change', we have to simultaneously address three challenges:

- **transition to a net zero economy;**
- **adapt to climate change that is already locked into the system; and**
- **address the state of nature and the associated five main drivers of biodiversity loss.**

These all overlap. Any use of the land involves either capture or release of greenhouse gases, and net zero requires the enhancement of land and coastal carbon sinks. At the same time, any use of the land involves enhancing or reducing the capacity of human and natural systems to adapt to climate change. Due to lags in the climate system, further warming of at least 0.6°C is inevitable even if all anthropogenic emissions stopped today. So, for land use, it's not possible to disentangle mitigation and adaptation. Finally, the state of nature results from the choices we make about the use of the land and sea.

The response to the triple challenge must engage the source of the problem: our use of fossil fuels and natural resources on land and at sea.

The rate of burning fossil fuels and land use change escalated in the 1950s, when the oil economy took hold. The oil economy transformed our ability to break new ground, limited only by machinery and chainsaws rather than human labour. It transformed transport systems, allowing people to extract resources from hitherto inaccessible places, including more fossil fuels and the movement of potentially invasive species. Oil industrialises farming (including the Haber-Bosch process for fertilisers), forestry and fisheries, transforming land use, habitat loss and fragmentation. It creates and maintains monocultures, adding fossil fuels to the mix of sunshine, soil and water in our food footprint. Oil transforms our towns and cities, now 'zoned' for specific uses and designed around the car.

Since all life impacts and utilises the carbon and nitrogen that define the Climate Emergency, we should ask: what is the role of monocultures in a net zero, just, nature-rich future, as the choice between 'nature' and 'production' is clearly a false one?

We have already burnt most of our global carbon budget. The Climate Emergency is here to stay, and, with it, nature-based solutions to regulate the habitable space for life. 'Diversity' and 'integration' should be the watchwords for all of our uses of the land and sea.

FORMAT OF THE SUMMIT

The format of the previous sessions is structured around three sessions:

- **an introductory set of presentations and short 'provocations' around the Summit topic to get people thinking and challenging convention.**
- **a session that encourages participants to use their creative knowledge and experience to list, in this case, nature-based solutions and categorise their lists.**
- **a closing session to prioritise solutions and highlight actions required.**

We used 'zoom' as our online platform and Alan Caldwell facilitated the day on screen while Galina Toteva and Lindsey Gibb provided the technical support to participants to ensure a smooth experience and enjoyable sessions in the virtual breakout rooms.

SNH staff participants also assumed the role (at short notice) of breakout room facilitators and scribes (along with cloud recordings of the event and breakout rooms).

We are currently assessing an online evaluation of the technical aspects of the event to further improve the experience for the next Summit.

Session 1: introduction (10:00 to 11:00)

We were conscious of the need to vary the ways participants engaged with the event. Following a careful and swift explanation of the basics of zoom (and introduction to the technical support team), Alan outlined the structure of the event.

Clive Mitchell gave an introduction as sponsor of the event and then both he and Mike gave five-minute introductory presentations from SNH (see foreword) and RSGS.

Alan then introduced the "Five for the Future' exercise (see Page 16) as an exercise that any participant could go to at their desk at any point on the Summit when they wanted a break from the screen or had finished a particular exercise ahead of time.

We then had six, five-minute provocations to stimulate discussion and creative thinking. A summary of these is set out in Pages 9-10.

Again, to break up the format, RSGS screened the two-minute promotional video on their groundbreaking Climate Solutions qualification. This can be viewed at the following link: www.rsgs.org/climate-solutions

FORMAT OF THE SUMMIT

Session 2 (11:20 to 12:30)

Following a twenty-minute coffee and screen break the Summit reconvened for a briefing on the first set of breakout sessions (using the breakout room function on zoom). Groups of four or five were predetermined to ensure a good spread of organisations and participants.

The first ten minutes was spent on introductions and sharing thoughts on the first session and, in particular, the provocations. Each group then set about recording their 'long list' of nature-based solutions to the climate and ecological emergency and then categorising these into prompted (but not fixed categories):

- The Land
- The Sea
- Integration
- Resilience – Fire, Drought, Flooding
- Built Environment
- Any other

"In writing up the report, the quality and quantity of the raw information was considered greater than the previous face-to-face Summits..."

As you will see from the section on main themes and priorities these categories were 'amended' in accordance with the conversation.

Before lunch, we reconvened in the main online conference and Alan took two feedback contributions from Clive Mitchell and Sue Marrs (the two hosts from SNH) to give everyone a sense of the conversation from two groups.

Session 3 (13:30 to 14:30)

Following a one-hour screen-break for lunch, we reconvened for another briefing for the breakout sessions to prioritise and agree actions under each of the categories discussed in session 2. In advance of breaking into groups, Mike Robinson and Clive Mitchell gave direction on what they both hoped to gain from this session. Both prompted their desire for a focus on tangible actions.

The SNH room facilitators remained constant while the participants in each breakout room were changed to give everyone more opportunity to work with other participants. Again, the first five minutes were spent on introductions and then each breakout room began the prioritisation.

Recording the breakout sessions relied on the note taking prowess of room facilitators, the record function on zoom and the feedback contributions from participants. In writing up this report, both Alan and Galina feel that the quality and quantity of the raw information is, in fact, far greater than the previous face-to-face summits. The professionalism of the participants in both engaging with the event and then taking the time to feedback must be recognised.

For the final twenty minutes we reconvened as one group and Alan facilitated feedback from each of the afternoon groups to give everyone a sense of the outcome from these sessions. This is captured in the 'Main Themes and Priorities' section below. Mike and Clive then wrapped up the event and thanked everyone for their participation.

SUMMARY OF THE 'PROVOCATIONS'

Summary of the 'Provocations'

Stuart Haszeldine, University of Edinburgh

Stuart reiterated the urgent need to decrease carbon emissions. While he acknowledged the value of nature-based solutions, he argued that we need drastic technological solutions such as carbon capture and storage (CCS), applied on a large scale. He raised the concern that land area is limited and nature-based solutions would be competing with CCS technology, where the latter is a more efficient mitigation approach. Another important argument is that NBS remove carbon on the scale of tens to hundreds of years, whereas carbon can be locked in geological storage for over 10,000 years via CCS. Therefore NBS are considered to be 'marginal' compared with the scale of CO_2 removals via CCS. This sparked discussion throughout all following sessions.

Ruth Taylor, NFU

Ruth discussed the importance of agriculture for society and how the sector needs to do more to decrease greenhouse gas emissions. She explained that some emissions are inherent to the sector. There is a need to develop and implement context specific nature-based solutions for the agricultural sector. Ruth stressed the importance of adopting a holistic approach towards agriculture, where food production, land productivity and climate change are all considered as part of a just transition. Recognising that land is multifunctional is key towards achieving this goal.

Holly Gillibrand, Climate Activist

Holly pointed out that there is an ongoing ecological crisis, which is interlinked with the climate emergency, yet often overlooked. She stressed that people and politicians in particular are too scared to be radical and that we need to declare an Ecological Emergency. She also pleaded for rewilding. Holly felt the current pandemic might make the public consider the broken 'business as usual' model for society. The participants were inspired by her speech, yet cautious about declaring too many emergencies, which might deflect attention and effort away from the greatest challenge we are facing – climate change.

SUMMARY OF THE 'PROVOCATIONS'

Elana Bader, SNH

Elana emphasised that nature-based solutions are about societal challenges and not just about nature restoration. Climate change is a human-induced issue and therefore needs to be addressed by changes in our behaviour. She stressed the importance and relevance of the "placemaking" approach. She also pointed out that nature-based solutions have multiple benefits and these occur simultaneously. An successful case study is the Fernbrae Meadows in South Lanark which was converted from an abandoned golf course into an urban park with natural flood management features. However, we need to be cautious about greenwashing.

Dave Reay, University of Edinburgh

Dave discussed the integration of nature-based solutions on different scales – from the level of the field up to national level. An ongoing issue with this is the existing silos. He contrasted the urgency of climate change mitigation with the decadal time scales required to turn a carbon source into a carbon sink. He raised the issue of integrating available data from different sectors and utilising more often the Monitor – Report – Verify approach. Dave emphasised the need to better educate people in order to be able to design and implement nature-based solutions, starting from schools. This includes recognising and addressing the unintended consequences of emission reductions. Nature-based solutions should be integrated with the 'Just Transition' principles and nature appropriation (also called "green grabbing") should be avoided. Dave provoked people to think how voluntary or mandatory should we make the application of nature-based solutions.

Cathy Tilbrook, SNH (who kindly stepped in at the last minute to present)

Cathy presented the importance of carbon stored in coastal habitats and near shore sediments, and the fact that seas and oceans are a large carbon sink; but it remains uncertain whether we could increase their storage capacity. We need to ensure that oceans do not turn into net carbon sources in the future. Cathy stressed the need to recognise the importance of blue carbon and bring it in more often in the climate change discussion

MAIN THEMES & PRIORITIES

The following main themes emerged as a result of all the discussions during the Climate Emergency Summit. The rest of the ideas are in Appendix 1.

Land

We need the land to do many things for us, which raises huge questions about the scale at which those multiple benefits are achieved, and how the costs of benefits of those choices are distributed. Is that something to be planned, centrally, or allowed to emerge (within a clear regulatory framework), locally? What should be the relative weight given the state, markets and private sector in delivering the range of public and private goods associated with land use choices?

Create Carbon Emissions & Carbon Sequestration Heat Maps: to direct climate action.

Formal Land Use Types: officially agree on the percentage of land to be used for each land use type and then map it. Discuss and resolve competing interests on land use, such as woodland creation versus sporting estates.

Reconsider 'Wasteful' Uses of Land: by looking at the current land usage and deciding on what needs to change in order to bring more benefits to society and the climate crisis.

Protected areas: identify, map and prioritise areas that require safeguarding. Introduce an emergency land protection status, thus increasing the level of land protection.

Peatland restoration: protect existing carbon stocks and increase biodiversity. Co-benefits include improving water quality and quantity. Emissions from peatlands to be added to UK's national greenhouse gas inventories, which further increases the urgency to restore peatlands on the way to Net Zero.

Semi-natural & natural woodlands: provide financial support for natural regeneration of woodlands. Woodland management to focus on increasing soil carbon and diversifying forest structure. Commercial forestry (monocultures) should not be considered an NBS, due to its limited contribution to biodiversity and lower rates of carbon sequestration compared to semi-natural and natural woodlands in certain conditions.

Nitrogen: need to ensure regulation of nitrogen use is part of climate actions – it's not just about carbon. Reduce nitrous oxide emissions through improved agricultural and transport practices.

Deer & Sheep: Reduce/control numbers to allow NBS to take place with minimum intervention, such as tree regeneration.

Rewilding: potential for rewilding to deliver nature-based solutions with a mosaic of habitats at a large scale.

Uplands: think about what the climate emergency means for the management of the uplands, as this will be a critical part of Scotland for land use changes.

Create Nature-Based Solution metrics: to account for the multiple benefits of restoring habitats and other nature-based solutions.

Emissions Leakage: changes in land use in Scotland should not result in higher adverse impacts elsewhere in the world, e.g. through increased imports.

Landowners

Some of the issues raised here are, unsurprisingly, similar to those under 'Land'. A key question is about the alignment of public and private interests in a net zero, nature-rich economy, or, put another way, in a safe operating space for humanity.

Site Specific List of Priority Areas: for development where the landowners are challenged to deliver nature-based solutions. This is an essential, immediate step.

Role of Landowners and Private Estates: to take more responsibility over climate change mitigation, instead of putting most of the pressure on food producers. Stricter requirements should be imposed on land ownership.

Continuous Professional Development (CPD): to facilitate the learning of farmers and landowners about nature-based solutions. The CPD to potentially become a requirement for financial support. The Farm Advisory Service to become better informed about nature-based solutions.

Landowners Forum: Convene land owners to discuss a landscape scale approach, where they reconcile social, economic and environmental objectives.

Sea

As with the Land, the use of the sea and coastal habitats brings costs and benefits and these are not evenly distributed. Choices in how we use the sea can store or release carbon, especially associated with disturbance of sediments. Management of coastal and nearshore habitats directly affects coastal erosion and risks to built infrastructure. Extracting energy from tides and offshore wind will directly affect the structure and diversity of marine ecosystems.

Protect Existing Stocks: large amounts of carbon are stored in marine sediments, coastal vegetation, etc.

Coastal Habitat Restoration: dune structures and salt marshes hold coastal sediment, thus stabilising coastlines to sea level rise. Potential multiple benefits to increase biodiversity, protect assets (energy) and improved human health.

Tidal Power: should be developed and utilised more as a renewable energy resource.

Think Blue Carbon: include blue carbon in coastal realignment plans, encouraging use of nature-based habitats instead of hard flood defences.

Increase the Focus on Blue Carbon: Most climate change mitigation strategies focus on the carbon emitted and stored on land. However, water bodies are a major carbon sink that we need to understand better. More research on blue carbon is needed.

Integration

Integration was a dominant theme of the workshop, recognising that nature provides a range of benefits over a range of scales to people. Carbon (greenhouse gases) is important, but it's not all about carbon. All management of the land and sea inevitable involves greenhouse gas emissions, adapting to a changing climate and the state of nature: all together, at the same time, on the same areas of land and sea.

Agri-ecological principles to be applied to farming: examples include agroforestry, organic agriculture, intercropping, minimum till etc.

Regional Land Use Partnerships: fundamental to integration from field level upwards, which is key to NBS. Systems thinking required.

Trial: identify a place where we can DO things differently through the regional land use partnerships.

Integrating data: from different fields of knowledge to inform carbon and biodiversity outcomes for different land use options. This can feed into spatial plans and community plan discussions.

Multiple benefits: adopt a functional approach to place, such as a place or a catchment approach. Move away from the current silos.

Resilience

Resilience is strongly connected to diversity, including the scale at which we integrate nature based solutions and how we manage the land and sea for productive uses. More diverse nature is more resilient to a changing climate, offers longer-term carbon storage and, overall, helps to reduce risks arising from pests and disease, including pandemics.

Right Intervention in the Right Place: all nature-based solutions are about resilience. Need to consider interventions that are suitable for current and future use of place

instead of simply restoring previous habitats or implementing "one-size-fits-all" measures.

People-focused nature-based solutions: placing people at the centre of nature-based solutions would increase communities' resilience to climate change.

Adopt a Holistic Approach towards Increasing Resilience: connectivity and inter-linkages between ecosystems is important. For example, we cannot think as land or sea separately in silos. Think about landscapes as a whole instead of individual places.

Built Environment

The built environment is where people and nature can come together. But those opportunities are not evenly distributed. This is starkly illustrated by the effects of restrictions to deal with coronavirus, and the associations between poor population health and the quality of local environments. People must be involved in all NBS, but especially in the built environment. Solutions must be place-based and built around the Place Principle.

Collective valuing of nature: develop recognised standard guidelines. For example, being able to demand from your local authorities green space if you don't have one within a certain distance of your house.

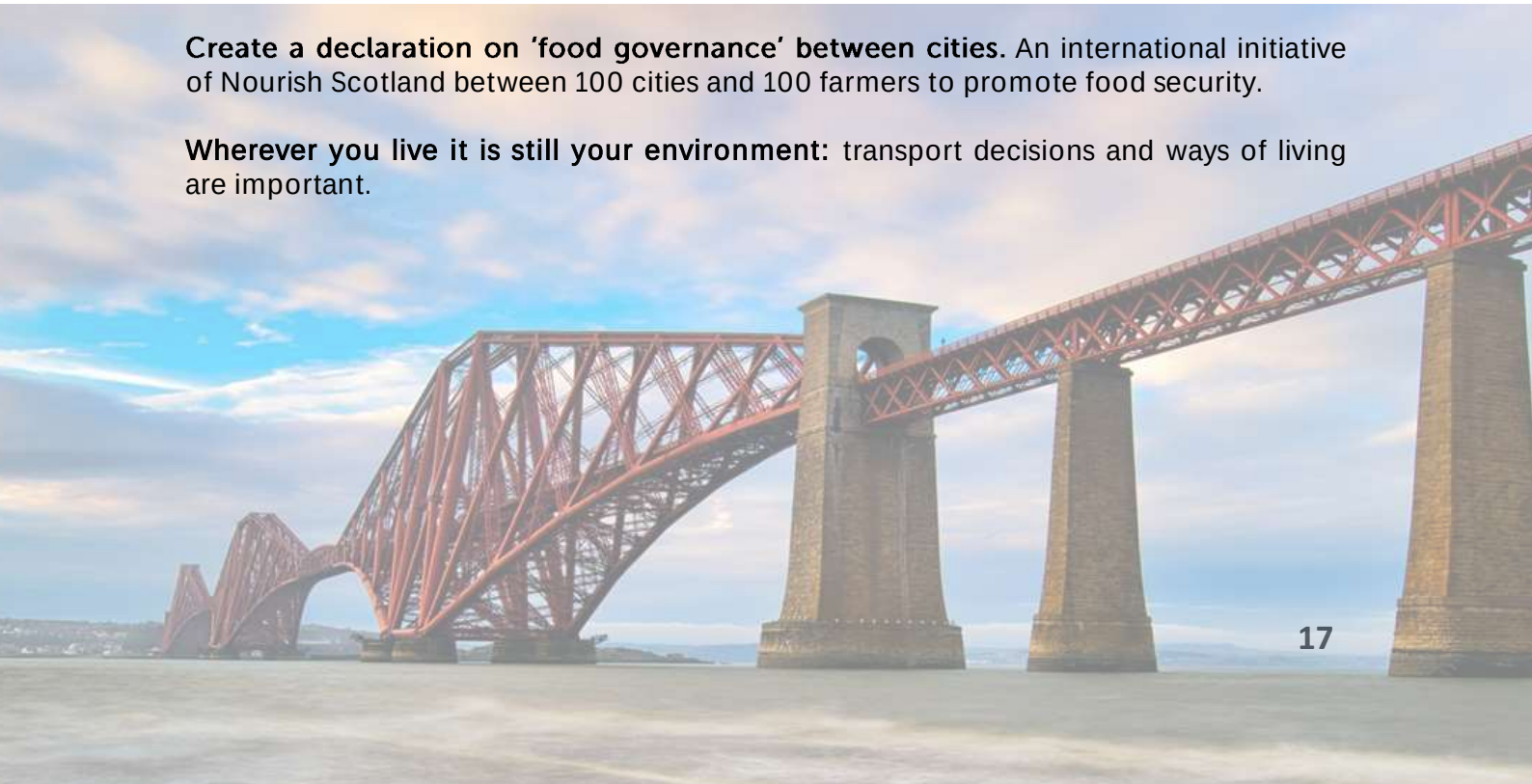
National Planning Framework: green and blue infrastructure should be embedded in NPF4.

Approach 'Liberty' land holding re 130,000km2 of Scotland to deliver land change – check status of this land holding with *Alcan*.

Integrate Nature-based solutions in Urban Planning: create more semi-natural habitats, plant flowers for pollinators, plant and preserve urban trees, green roofs, promote community allotments, use permeable surfaces to alleviate floods etc.

Create a declaration on 'food governance' between cities. An international initiative of Nourish Scotland between 100 cities and 100 farmers to promote food security.

Wherever you live it is still your environment: transport decisions and ways of living are important.



Timescales

The scale of collective global inaction over the last 40 years magnifies the challenges of the next 10 years. This is well in excess of the times over which NBS can sequester carbon, but not for other benefits. We need to try many things in different places, evaluating their impacts to provide the evidence base for designing future interventions.

Accelerate action: do as much as we can as soon as possible. We need to act on climate change NOW while still developing good baselines and being able to monitor/ measure success.

Intergenerational sustainability. There is not just a spatial or place scales to nature-based solutions but a time-scale to ensure inter-generational sustainability through engaging with people in place.

Leadership

Leadership is a vital part of governance: who make what decisions and in whose interests are those decisions made? This links to all of the other main themes including integration, diversity, risk and the distribution of costs and benefits. A feature of the climate and nature crises is that they are deeply connected. Solutions lie in different, more integrated, decision-making than the structures and processes that gave rise to the problems. The diversity of benefits will directly reflect the diversity of people and interests involved in decision-making.

Take Action Now: There is a general feeling that we have all the solutions for reducing emissions and locking carbon that we need to take action now. There is a lack of a strong over-arching lead (from government) to avoid silos and bring funding and solutions together under one coherent umbrella direction/policy. The importance of strong leadership was highlighted in the previous two Climate Emergency Summits.

Ecological Emergency: Climate change and loss of biodiversity are two separate but interwoven challenges that need to be tackled now. Declaring an Ecological Emergency in addition to the Climate Emergency was proposed during the Summit. There was a counter position that declaring too many separate emergencies may be counterproductive. Important to debate and discuss this dilemma.

Emergency Response: Lots of lessons can be learned from the coronavirus actions about how to promote the behavioral changes that are necessary to reduce GHG emissions. It is essential to collate a list of actions we want to prioritise as we slowly emerge from the current COVID-19 emergency. Now that the population are aware of the importance of 'flattening the curve' how can this thinking be applied to the climate and ecological emergency?

Finance & Investment: how we fund the actions required by the climate emergency was the topic of the second Summit. Baillie Gifford are keen to host a further Summit on

the subject bringing their investment network together for more thought on this subject. This should include investment and funding solutions required to respond to the ecological emergency. Needs resources and a fighting fund.

Policy

Policy describes the relationships between the State, markets and private sector, and how well these are aligned for public goods. What is the relative importance of individual rights and responsibilities, markets and private interests? The choice of areas in which to enact policy is the focus of attention, but, often, it is the areas that are not the focus (e.g. because they are 'too difficult') that are more important. Policy is a key means through which risks are identified, articulated and owned, and hence who bears the costs when the unexpected happens.

Natural Bill of Rights: a formal right enshrined in law or national constitutional identity which underpins the human right to a healthy environment, a biodiverse rich future and access to natural spaces.

New Financial & Regulatory models: that recognise and capture the multiple benefits of implementing nature-based solutions. For example, creating a coordinated land plan that includes nature-based solutions, place-based approaches, agricultural practices, climate adaptation, energy strategy, land planning, etc. In terms of finance, a shift towards sustainable finance, such as the 6 Capitals framework. Create genuinely investable opportunities.

GDP: rethink the measure of economic growth. Need to account for the destruction of biodiversity when reporting GDP. This has been highlighted at each of the previous Summits as a key topic to address in detail at a future Summit.

Greenwashing: nature-based solutions should be accompanied by an adequate legislative framework which ensures that strong efforts to reduce emissions are taken in all sectors and companies within these.

Strong Climate Steer in High Level Policies & Strategies: such as the Climate Change Plan, Regional Land Use Strategy, National Planning Framework 4. Need to clarify responsibilities for each sector to take appropriate action and share the climate change urgency as well as key messages.

Integrated land use policy: that empowers land managers, but also considers the food system and the demand side including waste reduction. Outcome-based payments for agricultural support mechanism.

Shared Vision of a Zero-Carbon Scotland: a positive opportunity to rethink the purpose of the economy, to reflect on what is actually important for our wellbeing and the sort of communities and environment we would like to live in.

Role of People & Communities

We all contribute to the Climate Emergency and state of nature through our behaviours, especially our consumption of goods and services and lifestyle choices. People and our behaviours are an essential part of the solution. For that to be effective, people need to be involved in decisions from policy to infrastructure to shape the material, social and individual factors that define our behaviours

A Positive Climate Narrative: need to inspire people, create a narrative, and provide a vision. If lots of people are inspired and excited by a common goal, and are empowered to bring about change locally, then rapid transformation becomes possible.

More that unites us than divides us: communicate nature-based solutions and climate change in an integrating manner, where no one is alienated from the discussion. Focus on the common goal and the fact that we all need to pull in the same direction.

Moonshot: we need bold, radical, solutions-oriented thinking towards climate change. Share the lessons: need for case studies and success stories to support understanding, make nature-based solutions tangible, drive forward adoption and lend credibility. Need to identify the areas which need case studies the most and ways to make these happen.

Bottom-up Approaches: engage local communities to deliver nature-based solutions.

"Honest Brokers" & organisations like RSGS: to convene safe science led spaces and debates. They should also provide independent evaluation of technology, nature based solutions and other climate change mitigation options. Important to have access to unbiased data that are not funded by a specific sector.

Definition of Nature-Based Solutions: need a standardised definition of nature-based solutions. The European Commission was put forwards: "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience".

FIVE FOR THE FUTURE

#BigClimateConversation #ClimateEmergency

RSGS are encouraging all organisations to consistently ask the same five questions at the end of each event they run in 2020 ahead of COP26. RSE, Hutton Institute, Scottish Natural Heritage, Young Scot and Scottish Enterprise have already indicated a willingness to take part. Ideally this is something that the Citizen's Climate Assembly could help to shape, but many other groups from local climate cafes to universities and businesses could also participate.

This would generate a set of common answers, which in turn will help to shape an organisation and society wide set of key concerns. To start the ball rolling we asked participants in this Summit to take the time to answer these questions. We introduced the idea early on in the workshop to give participants a task to concentrate on during any 'down time' in the event. We prompted answers in the follow up email from the event and the responses will help us to gauge the appetite and nature of responses.

The five questions are:

1. **What more could you/we do to reduce emissions more and quicker?**
2. **What would you ask Scottish and UK government to do to support this?**
3. **What should the international community do that it is not currently doing?**
4. **Is there an issue you would like to see given more credence in this arena?**
5. **What bold step would you like to introduce to help cut emissions?**

We will be publishing the initial responses in the next week or two with a proposal for gathering, collating and disseminating 'Five for the Future' responses from any meeting from across the country.

CONCLUSIONS & NEXT STEPS

Conclusions & Next Steps

Taking the latest Climate Emergency Summit online has further illustrated the commitment, energy and knowledge across the board in Scotland to help address the climate emergency. Participants embraced the new format with ease and, if anything, their level of engagement and the quality of their input during and after the event increased from the previous face to face events.

The main themes and priorities are of a scale and significance that the Scottish Government should commit resources to explore these further, enlisting the support of participants from across the sectors.

The organisers will continue to review and refine the format, content and recommendations from the Summits. We will improve our focus on practical solutions and influencing Government and stakeholders to action these solutions.

As organisers. we are open and willing to facilitate introductions and convene further sessions. **Please contact Mike Robinson at mike.robinson@rsgs.org if you are interested in proposing or sponsoring a future Summit.**

Future Climate Emergency Summits

The first three Summits have shown the appetite there is for these events. With the inevitable postponement of COP 26 and the understandable current focus from Government on COVID-19, we believe that these Summits have a key role to play in advancing thinking on tackling the climate emergency.

We already have interest from Zero Waste Scotland to sponsor a fourth Summit on the Built Environment. There are also plans for another on the topic of procurement. We are in discussions with the investment house, Baillie Gifford, about another Summit on the subject of financing solutions, bringing together other investment companies.

We will be convening smaller, high level forums to discuss the lessons from the Summits to date, how we can improve their effectiveness and how we can help develop solutions that Government and their partners in business and civic society can implement.

Our Summits are clearly powerful convening tools at a time when a focus on practical and achievable solutions to the climate emergency is critical. Now that society has been introduced to the concept of 'flattening the curve', when we lift our heads from the current COVID-19 emergency, we will be ready and waiting with practical solutions and willing partners.

CLOSING REMARKS

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We are grateful to everyone who participated in the event and for your contributions. It was a rich and diverse discussion representing the audience and the range of viewpoints and positions we all came from. Many points were passionately put. This was exactly what we wanted. Here are some highlights.

We know nature can help to fix many social problems, including health, climate change and biodiversity loss. These 'nature-based solutions' benefit both people and the natural environment. Their potential is limited mainly by our imagination, but can be applied to education, physical activity, mental health, flood management, water scarcity (even in Scotland!), air quality, absorbing and storing greenhouse gases, and managing pests, diseases and pathogens.

Nature must be part of the solution to the Climate Emergency. But we can't rely on it alone: we simply don't have a big enough planet or enough time for that. Not burning fossil fuels, capturing and storing CO2 are vital in the transition to a net zero economy. Managing the sinks and sources of greenhouse gases associated with how we use and manage the land and sea, and adapting to change, will be essential now and forever.

A just transition out of a fossil fuel economy is essential. This means greater transparency about the distribution of the costs and benefits for people and in all the choices we make about the use of natural resources on the land and at sea. It means no-one gets left behind.

Nature-based solutions protect, sustainably manage, and restore the natural environment so as to address specific societal challenges. They adapt to change and simultaneously provide multiple benefits to people and nature. Well designed and properly managed, they:

- are co-produced, with the diversity of benefits reflecting the diversity of people and interests involved in designing them;
- deliver benefits in a fair and equitable way, in a manner that promotes transparency and broad participation;
- can be implemented alone or integrated with other solutions to societal challenges such as technological and engineering solutions;
- work with the grain of natural processes, taking account of changing vegetation and soil structure and processes;
- maintain biological and cultural diversity;
- avoid changing or simplifying ecosystems for particular services or resources;
- increase nature's resilience and the ability of ecosystems to evolve over time.

CLOSING REMARKS

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All of this points to different ways of working to the ones we are used to. If the problems are people-driven; the solutions must involve people. The language we use should bring people together, not drive us apart. Against the backdrop of the Covid-19 lockdown, we are acutely aware that there is more that unites than divides us. Making sense of the different dimensions of nature-based solutions is possible through greater use of place-based approaches and the Place Principle. Education, training, building capacity and listening are essential: we all have something to learn.

In order to attract investment in nature-based solutions, we need to be able to demonstrate their impacts. This might be in terms of a financial return, an avoided cost or a social benefit, or indeed all three. The flip-side of investment is risk, and being clear about what these are, where they lie and who owns them. In many cases this won't be easy, but we have to try: an evaluation framework should be a feature of every nature-based solution.

Three key watch-words are: integration, diversity, resilience.

Clive Mitchell and Sue Marrs,
Scottish Natural Heritage, April 2020

Appendix 1: All ideas generated in the Summit

Land Mapping & Prioritization

1. Need a map of suitable land uses by region in order to decide where to put different habitats and what to prioritise.
2. Mapping urgently needed of regional specific strategy and vision.
3. Use the great data available from the web. We need a geographical solution – critical issue is middle ground where you have huge competing influences of woodland, recreation, rough grazing, or shooting estates.
4. Need site specific list of priority areas for development where land owners are challenged to deliver.
5. Reconsider 'wasteful' uses of land; where alternative land uses would be more beneficial for society.
6. Use carbon emission heat maps together with carbon sequestration heat maps. In order to better direct actions for both emissions reduction and carbon sequestration. Otherwise could get more polarisation on land – better land becomes more intensively managed and poorer land is 'abandoned' in favour of carbon locking.
7. Need to balance carbon capture against what we want to get out of the land. Agriculture needs to remain productive. Implementing a blanket view rather than appropriate spatial scales would be problematic. Need high-level granularity of what the restrictions are in Scotland. Map of potential – land use capability maps exist for current climate and also prediction with CC impacts.
8. Important to identify land that needs safeguarding now to avoid worse impacts later on.
9. Peatland restoration critical for carbon storing and biodiversity. Links with current agricultural use.
10. Planting woodlands, enhancing natural regeneration and re-thinking end uses.
    a. Woodland regeneration benefits include soil carbon and diverse structure but require ongoing management.
    b. Woodland management is a key part of this in terms of yield class and sequestration rates.
    c. Woodlands can be integrated with farmland but this remains a controversial topic.
11. Native woodlands are a nature-based solution but commercial forestry should not be considered as such. The latter is useful for timber, pulp but not a nature-based solution. It is important not to rush for the cheapest.
12. Re-think grouse shooting regulations and address ongoing grouse moorland issues, particularly loss of biodiversity.
13. What we mean by rewilding needs clarifying, as the term is controversial for some. We can envisage different levels of rewilding, for different levels of ambition.
14. Scale is important – utilise the regional land use framework. Community involvement and coordination. Should be joined up at a catchment scale because catchment is a useful unit.
15. Soils, diversity and nature are often local and contextualised. Identify ways to link support mechanisms to forestry, resilience, etc.

16. Emphasise the opportunity for more new jobs because often nature-based solutions require management for ever more (manage changes in climate, adaptation changes, disease, insects, floods, etc.)
17. Re-consider how think about grey, green and blue infrastructure.
18. Scotland's Land Use Strategy is envy of the rest of the UK.
19. Recognise that land use capability scenarios do exist, but these are not static.
20. Habitat restoration (peatland, grassland) water course re-establishment (works in any land changes).
21. Plant more flowers for pollinators.
22. Acid grasslands are an important habitat. Address the issue of shallow peat tree planting.
23. Implement smart floodplains on farms.
24. Use intercropping and cover crops.
25. Practice minimum till and zero till where applicable.
26. Using specific plant species to reduce GHG from grasslands through root microbial communities.
27. Recognition of the unique landscape of farmlands – address resistance from those who feel that land cannot be used for anything else.
28. Recognise that grazing livestock is not a nature-based solution in itself. Grazing livestock as part of rewilding might be.
29. Every farmer should be organic.
30. Implement regenerative agriculture.
31. Produce biochar and energy.
32. Circular economy should be promoted for social justice and resilience.
33. Increase designation of land.
34. We need to be careful that it is not all about carbon. Buy-in can also be obtained on other benefits, sometimes more so.
35. Concern expressed over the reliability of liquid carbon capture techniques.

Restore and Protect Sea & Coasts

36. All inshore seas should be marine preservation areas.
37. Dune restoration is key – role of dune structures in stabilisation and protection to hold sediment as opposed to hard engineering.
38. Restore salt marshes – dynamic coast works exploring role of restoration. Potential multiple benefits to protect assets (such as energy), stabilise coastline to sea level rise, secondary benefits to carbon capture and storage, health aspects, low sequestration.
39. Sea grasses protection to improve/regenerate habitat and to add stability.
40. Riparian planting in estuarine and riverine habitats.
41. Nature-based solution: tidal power sitting out there, why are we going after high-tech solutions rather than exploiting those benefits out there.
42. Protect existing stocks of blue carbon and coastal change/ natural defences
43. Do more research on blue carbon.
44. Protect kelp beds as they provide protection against coastal erosion. Kelp detritus is a major carbon store in sea lochs. Need to further investigate how resilient is the carbon storage in the deep sediment and how will this be impacted by sea level rise. Sea loch vulnerable to dredging – SNH reviewing.
45. Focus nature-based solutions on coastal habitats where people are familiar with.

Better Policy Integration

46. Increase afforestation by planting, while also considering rewilding, timber, recreation, biodiversity regeneration.
47. Consider the mental health value of woodlands and forest stands, which also implies different way of managing it.
48. Consider decision making on whole ecosystem/bioregional approach for regeneration and overall benefit that also benefits biodiversity.
49. Implement integrated pest management
50. Implement agroforestry across Scotland.
51. Link nature-based solutions and the circular economy.
52. Ensure a Just Transition
53. Undertake a major re-peopling of the countryside
54. Create a Vision about climate change and nature-based solutions that will excite people and inspire them to take action.
55. Need better accessible data and evidence to inform carbon and biodiversity outcomes for different land use options. This can inform spatial plans and community plan discussions.
56. Recast nature-based solutions as climate change adaptation (multi-faceted). Resist any dialogue about nature-based solutions that is purely about carbon.
57. Key thing is to move away from habitat specific thinking and find ways and scales where we can get examples on the ground. Take catchment scale approaches
58. Need to find a way of cutting up the land into pieces to take action in a place. Not peatland or woodland, but addressing all habitats within that. Quick wins is in the uplands.

Build Resilience at Scale

59. Reintroducing nature is critical part of enhancing resilience, and doing it appropriately, e.g. particular tree in particular place.
60. Environments have to work for and with people. NBS interventions must be done with recognition that people will interact and continue to interact with nature.
61. Understand human interaction with NBS in the place they are introduced. Emphasise that we need to be thinking about not just individual places but landscapes as a whole, e.g. catchments because they are functional units. Taking a place or catchment approach, linking with ecosystem services/co-benefits/multiple benefits.
62. Think about modified as well as natural habitats. Where can we enhance the green and the blue infrastructure?
63. Enhance planning, particularly for flood plains.
64. Establish a carbon democracy, where everyone has a carbon budget.
65. Reduce waste and increase efficiency, thus decreasing the pressure on nature

Built Environment to Incorporate Nature

66. Nature-based ideas for the built environment: deculverting, naturalisation, sustainable drainage systems, swales, green roofs, integrated travel/green routes (walking/cycling networks), public transportation infrastructure, wild spaces in urban areas, urban woodlands with trails, community growing/allotments; urban accessible rivers; urban trees for shading, permeable surfaces; greening.
67. Plant and take care of urban trees and semi natural habitats.
68. Flowers for pollinator in public parks and community spaces.
69. Planning integration with nature-based solutions.

70. Find ways to resource cities and make them sustainable?
71. Use cities/ urban environments to reinforce the role of personal responsibility and society. Built environment's main importance is in developing an understanding of nature rather than being effective in terms of nature-based solutions such as carbon capture.
72. Instigate behaviour change and public engagement.
73. Identify the tools/ approaches we need for developing land and built environment plans.
74. Strike a balance between local decisions and long term implication, e.g. zero carbon concrete.
75. Shift towards more regional governance. Cities need surrounding land in order to implement nature-based solutions.

Timescales and Urgency

76. Remember the need to better understand benefits of climate actions before taking them otherwise we could waste effort.
77. Clearly present the risk of people not acting now on climate change mitigation.
78. Consider the time scales involved with various climate change mitigation solutions, for example woodland creation and carbon capture and storage.
79. We cannot wait for Governments to talk themselves around these problems we have talked for too long.

More Leadership

80. The climate agenda should be driven with more attention to the biodiversity crisis. If both were given equal status, then nature-based solutions would be given more credence and could avoid some climate actions further damaging biodiversity outcomes (e.g. inappropriate tree planting).
81. Promote in the long-term greater use of digital communications to avoid unnecessary travel, more efficient use of food/less food waste, local sustainability and community resilience, similar to the coronavirus response.

Emergency & Financial Policy Instruments

82. Issue an emergency land protection status, possibly voluntary.
83. Acknowledge a right of human to nature.
84. Avoid green washing. Nature-based solutions should not be an excuse for business as usual for emissions.
85. Policy should follow climate justice principles.
86. Outcome-based payments for agricultural support mechanism.
87. Financial support for natural regeneration.
88. Create a widely shared vision of what a zero-carbon Scotland could look like and how this could be a positive opportunity to rethink the purpose of the economy, to reflect on what is actually important for our wellbeing and the sort of communities and environment we would like to live in.
89. Justice for land use and nature-based solutions.
90. Democratise planning.
91. Regional land use frameworks ought to have place specific approaches. A series of regional strategies have the potential of becoming a coordinated policy.
92. The Government to provide a clear direction towards achieving the Net Zero target.
93. Ensure the not just big players influence policy making. Include community and local interests.

94. Ensure decisions are taken according to plan policies (e.g. robust approach to safeguarding carbon stores and natural flood defences, not building on floodplains, etc.) Legislative frameworks are in place but not always enforced to protect land and deliver Nature-based solutions.

Role of People & Communities

95. Need to clarify – nature-based solutions to what? Climate change has to be in it. But using a living organism in the wider environment is not enough to qualify as nature-based solutions. Biodiversity has to be in it too. That's the minimum. Then other benefits.
96. Nature-based solutions is a contested topic; people can see it as way of allowing business as usual.
97. We need to get to a positive transitional state, although the one advantage of provocative talk is that it can open political space.
98. The recent report from our 'Climate Action Pioneer's project can act as an inspiration.
99. Recognise strategic level opportunities of climate change mitigation.
100. Create positive visions to excite people – it's not just doom and gloom. There is the opportunity to improve the quality of life. For example, improving catchment is better than a hard wall in a village.
101. Initiate local projects. One such successful example is the Ale Water Valley wetland management project in the Borders. All sectors helped shape the plan, could see the multiple benefits of the work, and could act quickly.
102. The Borders Forest Trust is another inspiring example of implementing nature-based solutions to climate change on the local level.
103. People need to realise how much they can do themselves towards climate change mitigation in their everyday actions. For example, purchasing power, where every pound can have an effect if it is pushed in the right direction.
104. Need to inspire people, create a narrative, and provide a vision. People have been working within a given paradigm (productivity agenda) for decades; the challenge is to enable the transition.
105. Two consultations are live for people to respond to NPF4 (extended due to CV19) and Land Commission Consultation (end April deadline).
106. Engage with best available data.
107. It is essential to recognise and understand the interlinkages between policy, civic society and science.
108. Understand that there are multiple implications of land use change and therefore multiple consequences.
109. Need to listen to localised solutions. Locals understand how communities work and what the pressures are. Strong support for taking communities with you, although some caution about community engagement, as their immediate desires may not be the best for CC.
110. Ask ourselves what kind of world do we want? Just and sustainable.
111. Redefine carbon management for best possible use with people at the heart of it.

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SOME OF THE IDEAS DISCUSSED